

REMARKS

At the time the current Office Action was mailed, the Examiner rejected claims 1-20. By this paper, Applicants have amended claims 1 and 11 for clarification of certain features to expedite allowance of the present application. Applicants note that claim 11 has been amended to place it in independent form. The amendments do not add any new matter. Upon entry of these amendments, claims 1-20 will be pending in the present application and are believed to be in condition for allowance. In view of the foregoing amendments and the following remarks, Applicants respectfully request reconsideration and allowance of all pending claims.

Claim Objections

In the Office Action, the Examiner objected to claim 8 as “being of improper dependent form for failing to further limit the subject matter of a previous claim.” Office Action, page 2. The Examiner stated that “the term die stack inherently implies that at least two semiconductor dies are present.” *Id.*, page 2. Applicants respectfully traverse the objection. Specifically, Applicants respectfully disagree with the Examiner’s statement that the term “die stack” necessarily includes at least two *semiconductor* dies. Applicants note that while a “stack” may inherently include at least two die or chips, it does not necessarily include at least two *semiconductor* die, as recited in claim 8. Therefore, Applicants believe that claim 8 is a proper dependent claim and further limits the claim from which it depends. Accordingly, Applicants respectfully request withdrawal of the claim objection to claim 8.

Rejections under 35. U.S.C. § 102

The Examiner rejected claims 1-3, 6, 8, 9 and 18-20 under 35 U.S.C. § 102(b) as being anticipated by Pedersen et al. (US 5,675,180, hereinafter “Pedersen”). Specifically, with regard to claim 1, the Examiner stated:

Regarding claim 1, Pedersen teaches a method of forming a semiconductor package comprising the acts of:

Picking a die stack[fig. 11, 112] from a temporary holding surface [fig 9, 116]:

and

Placing the die stack on a substrate [fig. 12, 150].

Office Action, page 2.

In response, Applicants have amended claim 1. Anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under Section 102, a single reference must teach each and every element or step of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Thus, if the claims recite even one element not found in the cited reference, the reference does not anticipate the claimed invention.

As a preliminary matter, Applicants would like to point out that Pedersen discloses a stack of “silicon segments” and techniques for stacking “silicon segments.” Pedersen, col. 2, lines 40-41. Pedersen defines “silicon segments” as “a plurality of adjacent die on a semiconductor wafer.” *Id.*, col. 2, lines 42-50. In contrast, independent claim 1 of the present

application recites a “die stack.” As discussed in the specification of the present application, a die stack is a stack of individually excised dies. Those skilled in the art would appreciate that the stack of “silicon segments” disclosed in Pedersen, wherein each silicon segment includes a plurality of adjacent dies on a semiconductor wafer, is not reasonably equivalent to the “die stack” recited in independent claim 1. Therefore, Pedersen does not disclose the “die stack” recited in independent claim 1. For this reason alone, Applicants respectfully submit that claim 1 allowable over the Pedersen reference.

Regardless, to further prosecution of the instant application, Applicants have chosen to amend independent claim 1 to further clarify the recited subject matter. Independent claim 1, as amended, recites “forming a die stack, wherein the die stack is formed such that *the die in the stack are electrically and mechanically coupled together before placing the dies stack on a temporary holding surface.*” (Emphasis added). Applicants respectfully assert that Pedersen does not disclose each and every feature of independent claim 1, as amended. Specifically, Applicants assert that Pederson does not disclose “forming the die stack...such that the die in the stack are electrically and mechanically coupled together before placing the die stack on a temporary holding surface,” as recited in independent claim 1.

In sharp contrast, Pedersen discloses a stack 112 of “silicon segments” that is mechanically formed on an “alignment fixture 116.” Pederson, col. 9, lines 29-37. In his rejection, the Examiner analogized the alignment fixture 116 with Applicants’ recited “temporary holding surface.” However, the silicon segments of Pederson are *not* electrically coupled

together *before* they are disposed onto the alignment fixture 116. Indeed, it is clear that the silicon segments are actually stacked on top of each other on top of the alignment fixture 116, such that they can be physically aligned with one another. “After the stack 112 solidifies, the edge bond pads 42...on each of the segments 36 is vertically electrically connected in the stack in order to provide an electrically functional stack 112.” *Id.*, col. 9, lines 44-47. Thus, the “silicon segments” of the “stack” in Pedersen are *not* electrically and mechanically coupled together before the “stack” is placed on a temporary holding surface. Rather, Pedersen teaches using an “alignment fixture,” (asserted to be analogous to the recited “temporary holding surface,”) to *form* the stack, and then electrically couples the “silicon segments” of the stack. Thus, the stack of Pederson is not formed *before* placing the stack on the temporary holding surface, much less are the silicon segments electrically and mechanically coupled together *before* placing the stack on the temporary holding surface. Therefore, Pedersen does not disclose each and every element recited in independent claim 1.

In view of the amendment and remarks set forth above, Applicants respectfully submit that the presently rejected claims contain subject matter that is not anticipated by Pedersen. Therefore, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 102 and allowance of independent claim 1 and dependent claims 2, 3, 6, 8, 9 and 18-20.

Rejections under 35 U.S.C. § 103

The Examiner rejected claims 4, 5, 7, and 17 under 35 U.S.C. § 103(a) as being unpatentable over Pedersen. Further, the Examiner rejected claim 10 as being unpatentable over

Pedersen in view of Huang et al. (US 6,753,205, hereinafter "Huang"). Applicants respectfully traverse the rejections.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

First § 103 rejection

As stated above, the Examiner rejected claims 4, 5, 7, and 17 as obvious over Pedersen. As discussed above with reference to 35 U.S.C. § 102, Pedersen does not disclose "forming a die stack..." and "picking a die stack..." as recited in independent claim 1. Applicants respectfully submit that claims 4, 5, 7, and 17 are allowable based on their dependency on claim 1. For at

least this reason, claims 4, 5, 7, and 17 are believed to be allowable over the cited reference, and Applicants respectfully request withdrawal of the rejection of claims 4, 5, 7, and 17.

Second § 103 rejection

As stated above, the Examiner rejected claim 10 as obvious over Pedersen in view of Huang. As discussed above with reference to 35 U.S.C. § 102, Pedersen does not disclose each of the elements recited in independent claim 1. Further, Huang does not cure the deficiencies of Pedersen with regard to claim 1. Applicants respectfully submit that claim 10 is allowable based on its dependency on claim 1. For at least this reason, claim 10 is believed to be allowable over the cited references taken alone or in combination with each other. Therefore, Applicants respectfully request withdrawal of the rejection of claim 10.

Nonstatutory Double Patenting Rejection

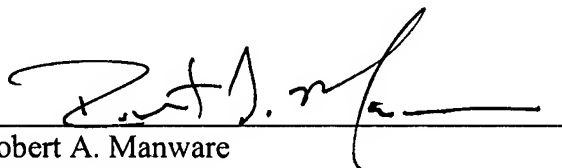
In the Office Action, the Examiner provisionally rejected claims 1, 5, 7-9, and 11-16 on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 6,682,955. Although Applicants do not necessarily agree with the Examiner's assertion, Applicants may be amenable to filing a terminal disclaimer upon allowance of the claims in the present application. Accordingly, Applicants respectfully request that the Examiner hold in abeyance the double-patenting rejection until the present claims are determined to be allowable.

Conclusion

In view of the remarks set forth above, Applicants respectfully request reconsideration of the Examiner's rejections and allowance of all pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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